display **79** can display "OK" and "Cancel" user interface elements in the display regions corresponding to the raised nodes. A computing system can have functions associated with these displayed elements that can execute when the user touches the buttons **73** and **74**.

[0104] FIG. **8** illustrates an exemplary touch screen having a user interface that can change topography to form a virtual keypad according to embodiments of the invention. In the example of FIG. **8**, touch screen **80** can have a desired user interface state in which the user interface can display virtual keypad **85** in the display **89**. As such, shape changeable nodes **82** overlaying the displayed keypad **85** can be raised on the surface **81**, thereby informing the user of the locations of the keys in the keypad to be touched. The underlying display **89** can display the numbers and symbols of the keypad in the display regions corresponding to the raised nodes. A computing system can have functions associated with these displayed numbers and symbols that can execute when the user touches the keypad **85**.

[0105] In the examples of FIGS. **6** through **8**, the touch screen blocks can be raised or lowered by individual underlying movable or deformable parts. For example, each touch screen block can include an individual actuator dedicated thereto. Alternatively, a flexible membrane or the shape changeable membrane with discrete point control can also be used instead of the individual actuators. The membrane can be placed below the touch screen blocks to encourage their movement or alternatively above the touch screen blocks to replace their movement. If the latter, the nodes and membranes can be substantially transparent or semi transparent so as to see the underlying touch displays.

[0106] Certain nodes of the user interface can raise above or lower below the initial surface, some can remain at their previous state above or below the initial surface, some can return to the initial surface, and some can remain unaltered in the initial surface, depending on the requirements for the user interface state. The user interface surface can be flat, as illustrated here, curved, or any other suitable shape capable of changing topography to provide a user interface.

[0107] It is to be understood that the shape changeable user interface is not limited to the user interface states illustrated here, but can include any state that can provide a user interface. In some instances, multiple user interface states can be combined.

[0108] Furthermore, although not shown, it should be appreciated that a transparent flexible membrane can overlay the touch screen blocks. When moved, the membrane can simply stretch to accommodate the new position of the touch screen blocks.

[0109] Similar to the examples of FIGS. **6** through **8**, FIG. **9** illustrates an exemplary touch screen of an electronic device having a user interface that can change topography according to embodiments of the invention. In the example of FIG. **9**, electronic device **90** can include touch screen **95**, which can include shape changeable surface **91** having a plurality of movable touch screen blocks **92**. In this example, the touch screen blocks **92** can be sized similarly to a displayed icon **99**. That is, the icons **99** can coincide with the touch screen blocks **92** so as to provide the ability to physically alter a particular icon displayed in the touch screen block **92**. A computing system can have functions associated with these icons that can execute when the user touches the icon **99**. By way of example, the touch screen **95** can be implemented in an iPhone™ manufactured by Apple. Inc of Cupertino, Calif. In this example, there can exist a matrix of rows and columns that can substantially coincide with the main page or menu page of the iPhone™. The touch screen can for example be broken into 4 columns and 5 rows. As shown, the icons **99** and their descriptors can substantially fill each of the movable touch screen blocks **92**. The blocks **92** can for example move up and/or down depending on the needs of the iPhone™ and user. In one example, when a user receives an incoming call, the block **92**-*a* associated with the phone icon can raise up. The same thing can happen with emails in block **92**-*b* or SMS messages in block **92**-*c*. The blocks can also raise up in accordance with a user touch. For example, as the user moves a finger around the touch screen, the block that would activate upon lift of finger can raise up, thereby alerting the user as to which icon is selectable for given touch point. It should be appreciated, that it is not limited to main page and can be used in all screens of the iPhone™ depending on needs of iPhone™ and user.

[0110] As mentioned previously, the touch screen blocks **92** can be raised or lowered by underlying movable or deformable parts. The blocks **92** of the user interface can raise above or lower below the initial surface, some can remain at their previous state above or below the initial surface, some can return to the initial surface, and some can remain unaltered in the initial surface, depending on the requirements for the user interface state. The nominal user interface surface can be flat, as illustrated here, curved, or any other suitable shape capable of changing topography to provide a user interface.

[0111] The example shown in FIG. **9** can work particularly well with graphical user interfaces that provide a plurality of spaced apart selectable icons oriented in a manner similar to the touch screen blocks **92** (e.g., matrix or rows and columns). Each of the spaced apart icons can be displayed in a separate touch screen block **92**. The maximum number of icons that can be displayed can coincide with the total number of touch screen blocks **62**. Of course, the number of icons displayed can be less than the maximum as shown in FIG. **9**. The number of icons and number of touch screen blocks can generally depend on the needs of the device.

[0112] It is to be understood that the shape changeable user interface is not limited to the user interface states illustrated here, but can include any state that can provide a user interface. In some instances, multiple user interface states can be combined.

[0113] FIG. **10** illustrates a side view of an exemplary user interface that can change topography using electromechanical devices according to embodiments of the invention. In the example of FIG. **10**, user interface **100** can include dynamic shape changeable surface **101** having individual shape changeable nodes **108**. In some embodiments, the dynamic surface **101**, and more particularly each of the nodes **108** can be made up of individual selectable, alterable portions **102** that can receive a touch on a front side. The individual alterable portions **102** can be configured to change their position or their physical configuration in order to affect a topography change at the dynamic surface **101**.

[0114] The individual alterable portions **102** can be widely varied. The individual alterable portions can include at least a sensing layer. The sensing layer can for example be configured to detect the presence of an object in close proximity thereto and further whether an object is touching. The sensing layer can for example be a touch sensing layer, although it should be appreciated that this is not a limitation and that